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ABSTRACT

The psychological-educational test program that is used at Harcum Junior College in Bryn Mawr, Pennsylvania is discussed. The program assists students individually and in groups to assume responsibility for making their own educational and vocational career decisions. Student and class profiles from 1962 to 1970 which include I.Q. average, verbal and mathematical class averages as determined by the Scholastic Aptitude Test (SAT), and other measures of individual achievement are analyzed. During the nine year period, Harcum has utilized a variety of measuring devices to ascertain for its freshmen their: (1) academic potential; (2) academic achievement level and special academic skills; (3) reading achievement or potential; (4) critical thinking ability; (5) study habits or attitudes; and (6) personality characteristics associated with adjustment to college life. A sustained effort has been made to furnish faculty, staff, and students with comprehensive, accurate information to help them make competent, considered decisions relating to individual student educational progress. (AE)

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PSYCHOMETRIC EVALUATION OF HARCUM

FRESHMEN:- 1962-1970

A Research Contribution to Educational Planning
(IRR 70-48)

Office of Research
Harcum Junior College
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TM 000 639

HARCUM JUNIOR COLLEGE
BRYN MAWR, PENNA. 19010

IRR 70-48

Psychometric Evaluation of Harcum Freshmen:- 1962 through 1970

1. "The measurment and interpretation of psychological-educational test information is a major dimension of a comprehensive guidance function. As conceived at Harcum, the guidance process focuses on assisting students, individually and in groups, to assume responsibility for making their own educational and vocational career decisions. In this framework, it becomes essential that comprehensive, accurate information be available to each student to form the basis for considered educational-vocational choices. Today, it is generally acknowledged that each student should have available such comprehensive accurate information to serve as a platform for competant decisions relating to educational and vocational choices." (1)

2. At Harcum, prior to 1962, the only systematic psychometric evaluation of freshmen consisted of the academic potential test - School and College Ability Test (SCAT) and academic achievement test - Sequential Test of Educational Progress (STEP). There were no special skills tests nor occupational or personality inventories.

3. In September 1962, the Hackman-Gaither Vocational Interests Inventory was incorporated into the Freshman Tests-Inventories Battery. The results of the Hackman-Gaither provided for the identification, in terms of relative strengths, (weak, indifferent, moderate and strong) of each student's interest in the eight major occupational areas of (1) Business Contact, (2) Scientific-Technical, (3) Artistic, (4) Health and Welfare, (5) Business-Clerical, (6) Mechanical, (7) Service and (8) Outdoor.

4. This type of information can be most helpful to the student. It points out major differences (if they exist) between her curriculum choice and her evident vocational interests. Also, where a logical relationship exists between curriculum

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(1) Blai, Jr. Boris "Test Interpretation: A Major Guidance Dimension." Personnel Journal, Vol. 47, No. 5, May, 1968

selection and vocational interests, pointing out this fact to the student helps to reaffirm for her the soundness of her decision to follow a particular program of study. The educational-vocational counseling of Harcum students was materially enhanced by the factual information provided by the Hackman-Gaither Vocational Interests Inventory.

5. For September 1962 freshmen matriculation, the College Entrance Examination Board's Scholastic Aptitude Test (S.A.T.) was optional. Approximately 75% of these freshmen offered S.A.T. scores; their Verbal average score being 412; Mathematics 392. Based upon a variety of I.Q. tests administered in the various high schools from which September 1962 freshmen graduated, the average I.Q. of this class was 107.

6. For September 1963 and subsequent freshmen the College Board S.A.T. was made mandatory. For September 1963 freshmen, their average Verbal score was 447; Mathematics 428. Their average I.Q. was 112.

7. For September 1964 freshmen their average College Board S.A.T. scores were: Verbal 442; Mathematics 422. Their I.Q. average was 114.

8. Introduction of the Gordon Personal Profile for September 1965 freshmen provided a measure of four personality traits significant in the daily functioning of the normal person: Ascendancy, Responsibility, Sociability and Emotional Stability. Low scores (below the 25th percentile) in these particular personality characteristics are associated with levels of behavioral adjustment generally considered not desirable in terms of the student's effective adjustment to her environment. Their College Board S.A.T. Verbal average was 445; Mathematics 426 and their average I.Q. was 114.

9. For September 1965 freshmen their average I.Q. was 114, S.A.T. Verbal 445, Mathematics 426.

10. Up until September 1966, no uniform I.Q. was available, since data had been furnished by the high schools using the Otis, California, Norge-Thorndike, Wechsler, etc. This year the Slosser Short Intelligence Test was incorporated into the Freshmen Tests and Inventories Battery. Also introduced in September 1966 was the Nelso-Denny Reading Test, thus providing a measure of incoming freshmen reading ability in terms of vocabulary and comprehension. The test serves both screening and diagnostic purposes. For screening, the total score is used; for diagnosing individual problems, strengths and weaknesses, the sub-total scores in vocabulary and comprehension are useful. A total score below the 30th percentile indicates the high probability of a reading problem and all freshmen falling into this category are required to attend a Reading Development Course in The Reading Clinic. Some 68% of the September 1866 freshmen scored at or above the 30th percentile in their "total" Nelson-Denny scores.

11. College Board S.A.T. scores for September 1966 freshmen were: Verbal average = 468; Mathematics average - 452. I.Q. average was 117. In the fall of 1966, Cazenovia College conducted a survey of freshmen testing programs among 15 junior resident colleges for women. In terms of a comprehensive testing program, Harcum ranked number 1 in the number of tests included in the freshman battery, being the only one offering 6 diversified tests, including: (1) and (2) assessment of academic achievement and ability (the SCAT and STEP tests), (3) an intelligence test (the Slosser Short Intelligence Test); (4) a vocational interest inventory (Hackman-Gaither Vocational Interests Inventory; (5) a personality inventory (the Gordon Personal Profile); and (6) a reading diagnostic test (Nelso-Denny Reading Test). The uses of tests at Harcum have included: (1) course placement, (2) general academic advisement, (3) identifying need for reading development, (4) vocational guidance, (5) college transfer counseling, (6) persona; counseling, (7) admissions, and (8) educational research.

12. The incorporation of the "Survey of Study Habits and Attitudes" into the September 1967 freshman battery of tests and inventories provided an instrument for the comparative measurement of various student habits (promptness in completing academic assignments, freedom from wasteful delay, use of effective study procedures, how-to-study skills), attitudes (opinions of teachers classroom behavior and methods, approval of educational objectives, practices and requirements) and readiness (combination of study habits and attitudes). The normative group with which Harcum freshmen have been compared consists of a sample of 3054 college freshmen from nine colleges. The averages for September 1967 freshmen compared with this normative group were:

Study Habits Percentile	= 38th
Study Attitudes Percentile	= 30th
Study Readiness Percentile	= 32nd

The "Survey of Study Habits and Attitudes" is a diagnostic instrument for the academic adjustment counseling of college students. Scores on the SSHA inventory reflect attitudes and study habits that are significantly related to academic success and are relatively independent of scores on scholastic aptitude tests. Thus the SSHA can be used to help identify students whose study habits and attitudes may prevent them from taking full advantage of their educational opportunities.

13. For September 1967 incoming freshmen their average S.A.T. scores were: Verbal = 400; Mathematics = 398. I.Q. average was 110. Some 61% of this calss scored at or above the 30th percentile in their "total" Nelson-Denny scores. Their averages on the Gordon Personal Profile were: Ascendancy-50th percentile, as compared with a normative group of 1300 college women; Responsibility - 41st percentile; Emotional Stability - 42nd percentile, Sociability - 46th percentile.

14. The total SCAT and STEP tests were administered the last time for incoming September 1967 freshmen. As the following summary of average scores reveals, a very high degree of matching existed among the freshman classes - 1962-1968:

	SCAT average Scores 1962-1965 Averages	1966	1967	1968
Verbal	291	291	290	290
Quantitative	290	291	288	290
Total	290	291	290	290

	STEP Average Scores 1962-1965 Averages	1966	1967	1968
Math	273	273	272	-
Science	273	277	271	-
Soc. Studies	281	281	279	-
Reading	296	296	292	295
Listening	292	291	287	262*
Writing	293	293	290	292

* Not valid. P.A. system not functioning properly

Evidently, in terms of measured academic capacity and levels of high school academic achievement, these seven classes were virtually identical in average performance on the SCAT and STEP tests.

15. In September 1968, the testing was temporarily suspended except as noted in paragraph 14 above. The average I.Q. of this class was 108; their S.A.T. averages were Verbal = 389, Mathematics = 388.

16. The September 1969 freshmen achieved the following test and inventory scores: I.Q. = 108, S.A.T. Verbal = 388; Mathematics - 384; English Achievement = 424 (required for the first time). Study Habits and Attitudes Inventory averages:

Study Habits Percentile = 51st
Study Attitudes Percentile = 50th
Study Readiness Percentile = 50th

Nelson-Denny Reading Test - some 86% scored at or above the 30th national percentile for 'total' scores.

17. The September 1970 freshmen achieved the following test-inventory scores. I.Q. average = 107, S.A.T. Verbal average = 390, Mathematics = 403; English Achievement average = 420. Nelson-Denny Reading Test -

some 53% scored at or above the 30th national percentile on the 'total' score. For September 1970 freshmen the Watson-Glaser Critical Thinking Appraisal was introduced. This consists of a series of test exercises which require the application of some important abilities involved in critical thinking, including Inference, Recognition of Assumptions, Deduction, Interpretation, Evaluation of Arguments. The percentiles reported compare with a normative group of some 5, 297 freshmen. In comparison with this standardized population, percentiles of 94 and above are considered "Very High;" 70-93 "High;" 32-69 "Average;" 8-31 "Low;" and 1-7 "Very Low." September 1970 freshmen distributed themselves as follows:

Very High	= 1%
High	= 4%
Average	= 16%
Low	= 52%
Very Low	= 27%

18. The following tabulations summarize the performance of 1962-1970 Harcum freshmen in various tests and inventories.

I.Q. Averages

1962	= 107	1967	= 110
1963	= 112	1968	= 108
1964	= 114	1969	= 108
1965	= 114	1970	= 107
1966	= 117	Average	= 111

I.Q. Distributions

I.Q. Classification*	Academic Potential	1965	1966	1967	1968	1969	1970	6-Yr. Avgs.
Average (90-99)	Jr.College	1%	3%	9%	15%	14%	16%	10%
High Average (100-109)	Jr.College	47	20	41	40	29	42	37
Bright (110-119)	College	48	62	40	37	25	28	40
Superior (120-139)	Coll.& Grad.Work	4	14	10	8	5	12	9
Very Superior (140 +)	Coll.& Grad.Work	-	.2	.3	-	-	-	.1

*Slosser I.Q. Classification Guide of 1964

The 9-year average of 111 indicate that as a group, freshmen classes have been "Bright" (110-119). Additionally, during this period some 86% have been "High Average" or better in I.Q. scoring, suggesting that "typically" a substantial majority (49%) have had an academic potential for college as well as junior college level of study.

College Board Averages

	Verbal	Math	Eng. Ach.
1962	412	392	
1963	447	428	
1964	442	422	
1965	445	426	
1966	468	452	
1967	400	398	
1968	389	388	
1969	388	384	424
1970	390	403	420
	420	410	
*High School Senior girls averages =	464	466	

(*As reported in "College Board Score Reports = 1969-1970". C.E.E.B.)

Harcum freshmen, 1962-1970, have consistently scored below the latest averages reported by the College Entrance Examination Board. However, as the C.E.E.B. has stated - "the S.A.T. is subject to 'errors of measurement,' as is true of all tests and measuring devices generally. This statistical term means that scores fluctuate around an average which can be thought of as a 'true score' for the individual. For both the SAT Verbal and Mathematics this is a range extending from 30-plus points below to 30-plus points above it. If a score is 430, it should be thought of as a range 400-460. Therefore, the upper ranges of the Harcum averages of 420 and 410 and the lower ranges of the high schools reported in the C.E.E.B. report - 464 and 466, overlap in both instances.

As the C.E.E.B. states - "If you think of your scores as ranges, you will realize that small differences between scores do not necessarily indicate real differences in ability. (Amy's) SAT-verbal score may be 480 (a range of 450-510), and (Zelda's) score may be 440 (a range of 410-470). Even though (Amy's) score on the test is 40 points higher than (Zelda's), there is a fair chance that if they took the test again, (Amy's) score would be as low as 450 and (Zelda's) score would be as high as 470."

Nelson-Denny Reading Test	(30th & higher National perc.tot.scores)
1966	68%
1967	61%
1969	86%
1970	53%

18. In summary - during the 9-year period 1962-1970, Harcum has utilized a variety of psychological and educational measuring devices in an effort to ascertain for its freshmen: (1) their academic potential, (2) academic achievement level, and special academic skills ((3) reading, (4) critical thinking; (5) study habits and attitudes) and (6) personality characteristics associated with adjustment (accommodation) to college-life. A sustained effort has been made to furnish faculty, staff, and students with comprehensive, accurate information to help them all in arriving at competent, considered, decisions relating to the educational progress of each Harcum student. It shall continue.

19. CORRECTION!!

The correct formula, paragraph 3 of IRR 70-46, "Holding Power" of Harcum Junior College, is

$$\sigma_D = \sqrt{\sigma^2_{M1} + \sigma^2_{M2}}$$

The σ^{2}'s were inadvertantly omitted!

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October 1970